Claims

1. A method for identifying a chronic alcoholic comprising

determining a concentration of ethyl oleate (O) and a concentration of ethyl palmitate (P) in a sample from a subject, and

determining a P/O ratio of the concentration of ethyl palmitate (P) to the concentration of ethyl oleate (O) in the sample,

wherein a P/O ratio less than 0.9 is indicative of a chronic alcoholic.

2. The method of claim 1, further comprising identifying a chronic alcoholic based on

determining a concentration of ethyl oleate in a sample from the subject,

wherein a concentration of ethyl oleate greater than 100 pmol/mL in the sample is indicative of a chronic alcoholic.

3. The method of claim 1 or 2, further comprising identifying a chronic alcoholic based on

determining a concentration of total FAEE (T) in the sample and

determining an O/T ratio of the concentration of ethyl oleate (O) to the concentration of total FAEE (T) in the sample,

wherein an O/T ratio greater than 0.52 is indicative of a chronic alcoholic.

4. The method of claim 1, wherein the sample is blood.

5. The method of claim 1, wherein the sample is isolated from the subject within 4 days of the cessation of alcohol intake.

6. The method of claim 1, wherein the sample is isolated from the subject within 24 hours of the cessation of alcohol intake.

7. The method of claim 1, wherein the sample is isolated from the subject within 12 hours of the cessation of alcohol intake.

8. The method of claim 1, wherein a subject with a P/O ratio of less than 0.9 is recommended for detoxification therapy.

9. The method of claim 1, wherein the subject is a human.

10. A method for identifying a chronic alcoholic comprising

determining a concentration of ethyl oleate (O) in a sample from a subject,

wherein a concentration of ethyl oleate (O) greater than 100 pmol/mL is indicative of a chronic alcoholic.

11. The method of claim 10, further comprising identifying a chronic alcoholic based on

determining a concentration of ethyl palmitate (P) in the sample, and

determining a P/O ratio of the concentration of ethyl palmitate to the concentration of ethyl oleate,

wherein a P/O ratio less than 0.9 is indicative of a chronic alcoholic.

12. The method of claim 10 or 11, further comprising identifying a chronic alcoholic based on

determining a concentration of total FAEE (T) in the sample, and

determining an O/T ratio of the concentration of ethyl oleate (O) to the concentration of total FAEE (T),

wherein an O/T ratio greater than 0.52 is indicative of a chronic alcoholic.

13. The method of claim 10, wherein the sample is blood.

14. The method of claim 10, wherein the sample is isolated from the subject within 4 days of the cessation of alcohol intake.

15. The method of claim 10, wherein the sample is isolated from the subject within 24 hours of the cessation of alcohol intake.

16. The method of claim 10, wherein the sample is isolated from the subject within 12 hours of the cessation of alcohol intake.

17. The method of claim 10, wherein a subject with a concentration of ethyl oleate greater than 100 pmol/mL is recommended for detoxification therapy.

18. The method of claim 10, wherein the subject is a human.

19. A method for identifying a chronic alcoholic comprising

determining a concentration of ethyl oleate (O) and a concentration of total FAEE (T) in a sample from a subject, and

determining an O/T ratio of the concentration of ethyl oleate (O) to the concentration of total FAEE (T) in the sample,

wherein an O/T ratio greater than 0.52 is indicative of a chronic alcoholic.

20. The method of claim 19, further comprising identifying a chronic alcoholic based on

determining a concentration of ethyl palmitate (P) in a sample from a subject, and

determining a P/O ratio of the concentration of ethyl palmitate (P) to the concentration of ethyl oleate (O) in the sample,

wherein a P/O ratio less than 0.9 is indicative of a chronic alcoholic.

21. The method of claim 19 or 20, further comprising identifying a chronic alcoholic based on

determining a concentration of ethyl oleate in a sample from a subject,

wherein a concentration of ethyl oleate greater than 100 pmol/mL is indicative of a chronic alcoholic.

22. The method of claim 19, wherein the sample is blood.

23. The method of claim 19, wherein the sample is isolated from the subject within 4 days of the cessation of alcohol intake.

24. The method of claim 19, wherein the sample is isolated from the subject within 24 hours of the cessation of alcohol intake.

25. The method of claim 19, wherein the sample is isolated from the subject within 12 hours of the cessation of alcohol intake.

26. The method of claim 19, wherein a subject with an O/T ratio of greater than 0.52 is recommended for detoxification therapy.

27. The method of claim 19, wherein the subject is a human.

28. A method for determining ethanol intake comprising

determining an amount of total FAEE in a liver sample from a subject

determining an amount of total FAEE in an adipose tissue sample from the subject, and

adding the amount of total FAEE in the liver sample to the amount of total FAEE in the adipose tissue sample to produce a combined total FAEE amount,

wherein a combined total FAEE amount of greater than 2000 pmol/g is indicative of ethanol intake by the subject.

29. The method of claim 28, wherein the subject is deceased.

30. The method of claim 28, wherein the subject is less than 2 years of age.

31. The method of claim 29, wherein the liver sample and the adipose tissue sample are harvested from the subject within 5 days of death.

32. The method of claim 29, wherein the liver sample and the adipose tissue sample are harvested from the subject within 3 days of death.

33. The method of claim 29, wherein the liver sample and the adipose tissue sample are harvested from the subject within 24 hours of death.

34. The method of claim 28, wherein the subject is a human.

35. A method for determining ethanol intake in a subject, comprising

determining an amount of total FAEE in a liver sample from the subject

determining an amount of total FAEE in an adipose tissue sample from the subject, and

determining the ratio of the amount of total liver FAEE to the amount of total adipose FAEE,

wherein a ratio of the amount of total liver FAEE to the amount of total adipose FAEE of at least 2 is indicative of ethanol intake by the subject.

36. The method of claim 35, wherein the subject is deceased and the method is a method for determining pre-mortem ethanol intake by the deceased subject.

37. The method of claim 35, wherein the subject is less than 2 years of age.

38. The method of claim 36, wherein the liver sample and the adipose tissue sample are harvested from the subject within 5 days of death.

39. The method of claim 36, wherein the liver sample and the adipose tissue sample are harvested from the subject within 3 days of death.

40. The method of claim 36, wherein the liver sample and the adipose tissue sample are harvested from the subject within 24 hours of death.

41. The method of claim 35, wherein the subject is a human.

42. The method of claim 35, wherein the subject has ethanol in the blood.

43. The method of claim 35, wherein the ethanol in the blood may be generated by bacteria.

44. The method of claim 35, wherein the amount of total liver FAEE is at least 10,000 pmol/gram.

45. A method for determining ethanol intake in a subject, comprising

determining an amount of ethyl arachidonate in a tissue selected from the group consisting of liver tissue and adipose tissue,

wherein an amount of ethyl arachidonate of at least 200 pmol/gram in the tissue is indicative of ethanol intake.

46. The method of claim 45, wherein the subject is deceased and the method is a method for determining pre-mortem ethanol intake by the deceased subject.

47. The method of claim 45, wherein the subject is less than 2 years of age.

48. The method of claim 46, wherein the tissue is harvested from the subject within 5 days of death.

49. The method of claim 46, wherein the tissue is harvested from the subject within 3 days of death.

50. The method of claim 46, wherein the tissue is harvested from the subject within 24 hours of death.

51. The method of claim 45, wherein the subject is a human.

52. The method of claim 45, wherein the subject has ethanol in the blood.

53. The method of claim 45, wherein the ethanol in the blood may be generated by bacteria.

54. The method of claim 45, wherein the amount of total liver FAEE is at least 10,000 pmol/gram.

55. The method of claim 45, further comprising determining a combined amount of total liver FAEE and total adipose FAEE, wherein a combined amount of at least 2000 pmol/gram or a ratio of the amount of total liver FAEE to the amount of total adipose FAEE of at least 2 is indicative of pre-mortem ethanol intake.

56. A kit for determining an amount of FAEE in a sample comprising

a collection tube,

a control amount of isolated FAEE,

an ice pack,

a thermal container, and

instructions for processing of the sample.

57. The kit of claim 56, wherein the FAEE is selected from the group consisting of ethyl oleate, ethyl palmitate, ethyl arachidonate, and total FAEE.

58. A method for identifying a binge drinker comprising

determining a concentration of ethyl oleate (O) and a concentration of ethyl palmitate (P) in a sample from a subject, and

determining a P/O ratio of the concentration of ethyl palmitate (P) to the concentration of ethyl oleate (O) in the sample,

wherein a P/O ratio greater than 1.0 is indicative of a binge drinker.

59. The method of claim 56, further comprising identifying a binge drinker based on

determining a concentration of ethyl oleate in a sample from the subject,

wherein a concentration of ethyl oleate less than 100 pmol/mL is indicative of a binge drinker.

60. The method of claim 58 or 59, further comprising

determining a concentration of total FAEE (T) in the sample and

determining an O/T ratio of the concentration of ethyl oleate (O) to the concentration of total FAEE (T) in the sample,

wherein an O/T ratio less than 0.52 is indicative of a binge drinker.

61. The method of claim 58, wherein the sample is blood.

62. The method of claim 58, wherein the sample is isolated from the subject within 2 days of the cessation of alcohol intake.

63. The method of claim 58, wherein the sample is isolated from the subject within 24 hours of the cessation of alcohol intake.

64. The method of claim 58, wherein the sample is isolated from the subject within 12 hours of the cessation of alcohol intake.

65. The method of claim 58, wherein a subject with a P/O ratio of greater than 1.0 is provided immediate medical attention.

66. The method of claim 58, wherein a subject with a P/O ratio of greater than 1.0 is placed on hemodialysis.

67. The method of claim 58, wherein the subject is a human.

68. A method for identifying a binge drinker comprising

determining a concentration of ethyl oleate (O) in a sample from a subject,

wherein a concentration of ethyl oleate less than 100 pmol/mL is indicative of a binge drinker.

69. The method of claim 66, further comprising identifying a binge drinker based on

determining a concentration of ethyl palmitate (P) in the sample, and

determining a P/O ratio of the concentration of ethyl palmitate (P) to the concentration of ethyl oleate (O),

wherein a P/O ratio greater than 1.0 is indicative of a binge drinker.

70. The method of claim 68 or 69, further comprising identifying a binge drinker based on

determining a concentration of total FAEE in the sample, and

determining an O/T ratio of the concentration of ethyl oleate (O) to the concentration of total FAEE (T),

wherein an O/T ratio less than 0.52 is indicative of a binge drinker.

71. The method of claim 68, wherein the sample is blood.

72. The method of claim 68, wherein the sample is isolated from the subject within 2 days of the cessation of alcohol intake.

73. The method of claim 68, wherein the sample is isolated from the subject within 24 hours of the cessation of alcohol intake.

74. The method of claim 68, wherein the sample is isolated from the subject within 12 hours of the cessation of alcohol intake.

75. The method of claim 68, wherein a subject with a concentration of ethyl oleate less than 100 pmol/mL is provided immediate medical attention.

76. The method of claim 68, wherein a subject with a concentration of ethyl oleate less than 100 pmol/mL is placed on hemodialysis.

77. The method of claim 68, wherein the subject is a human.

78. A method for identifying a binge drinker comprising

determining a concentration of ethyl oleate (O) and a concentration of total FAEE (T) in a sample from a subject, and

determining an O/T ratio of the concentration of ethyl oleate (O) to the concentration of total FAEE (T) in the sample,

wherein an O/T ratio less than 0.52 is indicative of a binge drinker.

79. The method of claim 78, further comprising

determining a concentration of ethyl palmitate (P) in a sample from a subject, and

determining a P/O ratio of the concentration of ethyl palmitate (P) to the concentration of ethyl oleate (O) in the sample,

wherein a P/O ratio greater than 1.0 is indicative of a binge drinker.

80. The method of claim 78 or 79, further comprising identifying a binge drinker based on

determining a concentration of ethyl oleate in a sample from the subject, wherein a concentration of ethyl oleate less than 100 pmol/mL in the sample is indicative of a binge drinker.

81. The method of claim 78, wherein the sample is blood.

82. The method of claim 78, wherein the sample is isolated from the subject within 2 days of the cessation of alcohol intake.

83. The method of claim 78, wherein the sample is isolated from the subject within 24 hours of the cessation of alcohol intake.

84. The method of claim 78, wherein the sample is isolated from the subject within 12 hours of the cessation of alcohol intake.

85. The method of claim 78, wherein a subject with an O/T ratio less than 0.52 is provided immediate medical attention.

86. The method of claim 78, wherein a subject with an O/T ratio less than 0.52 is placed on hemodialysis.

87. The method of claim 78, wherein the subject is a human.

88. A computer program product, comprising:

a computer-readable medium; and

computer-readable signals stored on the computer-readable medium that define instructions that, as a result of being executed by a computer, instruct the computer to perform a process of determining ethanol intake by a subject, the process comprising steps (or acts) of

determining whether combined total amount of liver and adipose FAEE is at least 2000 pmol/gram;

determining whether ratio of total liver FAEE to total adipose FAEE is at least two;

determining whether amount of liver or adipose ethyl arachidonate is at least 200 pmol/g;

wherein i) a combined total amount of liver and adipose FAEE of at least 2000 pmol/gram, or ii) a ratio of total liver FAEE to total adipose FAEE of at least two and an amount of total liver FAEE of at least 10,000 pmol/g, or iii) an amount of ethyl arachidonate level in liver or adipose of at least 200 pmol/g, are each indicative of ethanol intake by a subject.

89. The computer program product of claim 88, further comprising the step of determining whether blood ethanol concentration is at least 10 mg/dL.

90. The computer program product of claim 88, further comprising the step of determining whether urine or vitreous ethanol levels are positive for ethanol.

91. The computer program product of claim 88, further comprising the step of determining the combined total amount of liver and adipose FAEE from data entry of total amount of liver FAEE and data entry of total amount of adipose FAEE.

92. The computer program product of claim 88, further comprising the step of determining the ratio of total liver FAEE to total adipose FAEE from data entry of total amount of liver FAEE and data entry of total amount of adipose FAEE.

93. The computer program product of claim 88, further comprising the step of determining whether the subject was a chronic alcoholic.

94. The computer program product of claim 88, further comprising the step of determining whether the subject was a binge drinker.

95. A method of determining ethanol intake by a subject, comprising

determining whether combined total amount of liver and adipose FAEE is at least 2000 pmol/gram;

determining whether ratio of total liver FAEE to total adipose FAEE is at least two;

determining whether amount of liver or adipose ethyl arachidonate is at least 200 pmol/g;

wherein i) a combined total amount of liver and adipose FAEE of at least 2000 pmol/gram, or ii) a ratio of total liver FAEE to total adipose FAEE of at least two and an amount of total liver FAEE of at least 10,000 pmol/g, or iii) an amount of ethyl arachidonate level in liver or adipose of at least 200 pmol/g, are each indicative of ethanol intake by a subject,

wherein the method is implemented on a computer.